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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,466	02/04/2002	Robert J. Calvet	M-12486 US	6230

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FISH & RICHARDSON, PC  
12390 EL CAMINO REAL  
SAN DIEGO, CA 92130-2081

EXAMINER
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LEE, JOHN D

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 11/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/067,466	CALVET ET AL.	
	Examiner	Art Unit	
	John D. Lee	2874	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-64 is/are pending in the application.
- 4a) Of the above claim(s) 52-64 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-24, 33-36 and 39-51 is/are rejected.
- 7) ☐ Claim(s) 7, 25-32, 37 and 38 is/are objected to.
- 8) ☒ Claim(s) 1-64 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                          | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>0202</u> | 6) <input type="checkbox"/> Other: _____                                    |

Applicant's election without traverse of Invention I (claims 1-51) in Paper No. 1003 is acknowledged. Claims 52-64 are withdrawn from further consideration by the examiner, 37 CFR § 1.142(b), as being drawn to a non-elected invention.

The thirty-two (32) sheets of formal drawing filed on October 6, 2003, are acceptable.

The disclosure is objected to because of the following informalities: on page 1 of the specification, applicant has "incorporated by reference in its entirety" two (2) previously filed commonly owned U.S. Patent Applications. It is not clear, however, if applicant is attempting to incorporate by reference "essential material" or "nonessential material", and the treatment of these two types of material is different (see MPEP § 608.01(p)). The distinction is important since it appears that neither of the previously filed commonly owned applications has been published or issued as a patent, a situation that may entail additional requirements if "essential material" is being incorporated by reference. Appropriate explanation by applicant is required.

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 51 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In line 2 of this claim, there is no antecedent support for "the missing degrees of freedom", and it is not known what is being referred to. The claim is thus indefinite.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 8, 9, 11-13, 16-18, 21-24, 41, 46, 47, 49, and 50 are rejected under 35 U.S.C. § 102(b) as being clearly anticipated by U.S. Patent 5,461,515 to Sorce. Sorce discloses a passive alignment assembly configured to support an optical element (a mirror) to a predetermined position, the assembly comprising a base **12** having a first mating part, a payload **16** supporting the mirror and having a second mating part, and a connecting structure (six flexible connecting elements **18**) which contacts the first mating part of the base and the second mating part of the payload. The Sorce connecting structure constrains the payload in six degrees of freedom (column 2, lines 60-62), including position and attitude. The "micromachined" limitation in line 3 of claims 1 and 49 and the limitation of claim 5 represent *process* limitations that are given no weight in comparing the claimed structure to that of the prior art. As can be seen in the reference, the base and the payload comprise substantially planar and circular wafers. Note that the Sorce flexible connecting elements have internal flexure assemblies (e.g. ball joints) at each end where contact is made to the base and the

payload. With respect to the last limitation in applicant's claim 23, note that each Sorce connecting element has a plurality of attachment points (one at either end). Sorce specifically states that the arrangement therein is a *kinematic support system* (column 1, lines 37-39).

Claims 6, 10, 14, 15, 19, 20, 33-36, 39, 40, and 42-45 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,461,515 to Sorce. As mentioned above, it can clearly be seen that the Sorce base and the payload comprise substantially planar and circular wafers. The material of the wafers, however, is not disclosed. It would have been obvious to a person of ordinary skill in the art, therefore, to have used wafers of known materials for optical supporting structures, such as silicon. It is clear that the six degrees of freedom imparted by the Sorce structure include three orthogonal translational positions and three orthogonal angular positions. The degree of constraint, however, is not set forth in the reference. Applicant's claimed numerical values of less than one micron (for the translational positions) and less than five arcseconds (for the angular positions) would have been obvious values in Sorce, since it has been held that discovering the optimum value of a result effective variable involves only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)). Although not specifically stated in the reference, it is obviously clear that the flexible connecting elements enforce planarity, increase bending stiffness in the base and payload, and provide a desired trajectory of motion for the payload. Since there are "feet" attached to the Sorce flexible connecting elements to help attach the elements to the base and payload, the use of one or more of these "feet" as an optical

bench to help support an optical element would have been obvious to an ordinarily skilled artisan. The use of "receptacles" to position an optical element on the base and/or payload of Sorce would have been likewise obvious, since this is merely a generic term for attachment structures which must be present. Similarly, the use of adhesives or slots & tabs for attachment would have been obvious (since these are very common means of attachment in all optical arts). Although the Sorce apparatus is designed to support a mirror, its use for supporting other optical elements (e.g. optical fibers, lenses, and diodes) in six degrees of freedom would have been analogous and therefore obvious. Finally, since a slip-fit joint assembly is analogous to a ball joint assembly (as used in Sorce), the use of same for attaching the connecting elements to the base and payload in the reference would have been obvious to the person of ordinary skill in the art.

Claim 48 is rejected under 35 U.S.C. § 102(b) as being clearly anticipated by U.S. Patent 6,071,143 to Barthel et al. See Figure 3 of Barthel et al which discloses an optical element positioning assembly meeting all the limitations broadly set forth in this claim.

Claims 7, 25-32, 37, and 38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Sorce (the closest prior art of record to the assembly of these claims) does not disclose or reasonably suggest having the connecting structure (six flexible connecting elements **18**) formed from a substantially flat wafer. Sorce also does not disclose or reasonably suggest the use of

a *preload*, embodied in structural elements designed to impart a *preload*. Sorce further does not disclose or reasonably suggest any thermal compensation flexure assembly associated with the base, or any strain isolation flexure assembly associated with the base.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Other passive alignment assemblies configured to support optical elements to predetermined positions in up to six degrees of freedom can be seen in U.S. Patent 6,606,444 to Harman et al and in U.S. Patent Application Publication 2003/0197914 to Cox et al.

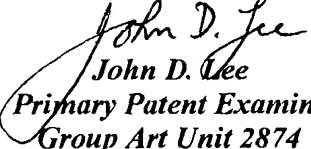
This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. § 103(c) and potential 35 U.S.C. §§ 102(e), (f) or (g) prior art under 35 U.S.C. § 103(a).

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (703) 308-4886. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956, to the

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technical support staff supervisor (Team 2) at telephone number (703) 308-3072, or to the Technology Center 2800 Customer Service Office at telephone number (703) 306-3329.

  
*John D. Lee*  
**Primary Patent Examiner**  
**Group Art Unit 2874**